REMARKS

Claims 1, 3, 4, 6, and 7 remain pending in this application. Claims 2, 5, and 8-22 have been canceled without prejudice or disclaimer. Features of claims 8, 2, and 5 have been incorporated into claim 1. For instance, the additional step of "heat treating the laminate at not less than 350°C" is supported by the limitation in canceled claim 8 as well as in Table 4 on page 37. The limitation that "the third magnetic layer comprises a magnetic material containing at least once element selected from the group consisting of Fe, Co, and Ni" has been imported from canceled claim 2. The limitation that "the magnetic material further contains at least one element selected from the group consisting of Rh, Pd, Ag, Ir, Pt, and Au" has been imported from canceled claim 5. Claims 3, 4, and 6 have been amended to depend from claim 1.

Claims 1-8 have been rejected under 35 U.S.C. § 102(e) as being anticipated by Inomata et al. 2003/0197984. This rejection is respectfully traversed.

The method of claim 1 requires heat-treating a laminate at not less than 350°C. Therefore, the MR element must be capable of maintaining its MR ratio when subjected to heat treatment at temperatures of at least 350°C. Heat treatment is used when an MR element is used in nonvolatile memory. This memory must include a semiconductor-switching element that, in one available method, is produced after the formation of the MR element. Heat treatment at temperatures not less than 350°C is required to produce this switching element. Therefore, it is advantageous to produce heat resistant MR elements for use with nonvolatile memory. *See e.g.* page 3, lines 6-14.

The method of claim 1 also requires that the third magnetic layer of the laminate comprises a magnetic material containing at least one element selected from the group consisting of Fe, Co, and Ni and the magnetic material further contains at least one element selected from the group consisting of Rh, Pd, Ag, Ir, Pt, and Au. Including Rh, Pd, Ag, Ir, Pt, or Au in the third magnetic layer is advantageous to maintaining the MR ratio to some extent after heat treatment at not less than 350°C. When these elements are not included in the magnetic material, then the MR element has a low heat resistance (i.e., the MR ratio significantly decreases after being heat treated at temperatures of at least 350°C).

This effect is demonstrated in Example 3 of the specification. Three sample MR elements, Samples 3-1, 3-2, and 3-3, that included at least one of the above listed elements in the third magnetic layer were subjected to heat-treatment at 280°C to 450°C. *See e.g.* page 33, lines 23-37, page 34, line 1, and page 36, lines 22-29. One sample MR element, Sample C, that did not include at least one of these elements in the third magnetic layer was also subjected to this same heat treatment. *See e.g.* page 33, lines 19-22 and page 36, lines 22-29. The results are laid out in Table 4 of the specification on page 37. As shown in the table, the MR ratio for Sample C decreased drastically at heat-treatments of at least 350°C, dropping from 28 at 280°C to almost half of that at 350°C and finally to almost zero at 400°C. In contrast, the MR ratio for samples 3-1 to 3-3 decreased little even at temperatures of at least 450°C.

In contrast to the method of claim 1, Inomata fails to disclose or suggest either heat-treating the MR element at temperatures not less than 350°C or the problems associated with such treatment. Furthermore, Inomata merely discloses a long list of elements that *may* be added to the magnetic layer. *See e.g.,* paragraphs [0076] and [0078]. Inomata suggests no particular advantage or other reason for choosing the elements recited in claim 1 from this list. Thus, Inomata couldn't suggest that the elements used in claim 1 would advantageously maintain the MR ratio even after the MR element is heat-treated at not less than 350°C.

Claims 1-8 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Shang et al., J. of Applied Physics, vol. 89, no. 11, pages 6874-6876, in view of Inomata et al. 2003/0197984. This rejection is respectfully traversed.

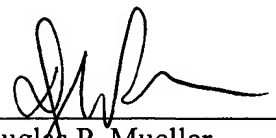
As noted by the examiner, Shang discloses a method for producing a magnetoresistive element containing a magnetic layer. However, Shang fails to disclose or suggest the problem associated with the heat resistance of the MR element or a solution to this problem. Shang fails to disclose or suggest that the magnetic layer should include Rh, Pd, Ag, Ir, Pt, or Au in order to maintain the MR ratio even after heat-treatment at temperatures not less than 350°C. Inomata does not fix these shortcomings. As discussed above, Inomata also fails to disclose or suggest that adding Rh, Pd, Ag, Ir, Pt, or Au helps to maintain the MR ratio even after the MR element is heat-treated at not less than 350°C. Therefore, a person having skill in the art would not be lead to the method of claim 1 from Shang even when combined with Inomata.

In view of the above amendments and remarks, Applicant respectfully requests a Notice of Allowance.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(612) 332-5300

Date: October 8, 2004



Douglas P. Mueller
Reg. No. 30,300

DPM/JKS/jt